DOCUMENT RESUME

ED 056 059 TM 000 847

AUTHOR	Harvill, Leo M.
TITLE	Evaluation of Several Methods for Measuring Young Children's Educational Attitudes.
INSTITUTION	South Dakota Univ., Vermillion. School of Education.
SPONS AGENCY	South Dakota Univ., Vermillion.
PUB DATE	May 71
NOTE	38p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Arithmetic; Art; *Attitude Tests; *Comparative Analysis; Correlation; *Educational Attitudes; Evaluation Methods; Grade 2; Grade 3; Measurement Instruments; Pictorial Stimuli; *Primary Grades; *Rating Scales; Reading; Test Validity; Visual Measures
IDENTIFIERS	Box Scale; Forced Choice Scale; Millimeter Scale; Picture Scale; Semantic Differential Scale

ABSTRACT

Five scales designed to measure the attitudes of young children toward arithmetic, reading, and art were developed. Two of the scales (Picture and Forced Choice) were ipsative in nature; the remaining three (Millimeter, Box, and Semantic Differential) allowed the child to express a more absolute attitude about each activity. The scales were administered to a sample of second and third graders and their teachers were asked to name those students who liked and those who disliked arithmetic the most. Intercorrelations were determined using the multitrait-multimethod approach. It was concluded that: (1) Group attitude scales concerning school activities can be administered to young children with few problems or errors; (2) Children most enjoyed the picture scale; (3) Ipsative attitude measures should be used with great caution; (4) Teacher nominations are not very valid as a criterion measure for primary grade attitude scales; (5) The two most promising types of scales were the Millimeter and Semantic Differential Scales; and (6) A method which may show some promise is the addition of pictures to these two scales for added interest and clarity. See TM 000 891-893 for descriptions of the scales. (Author/AG)

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EVALUATION OF SEVERAL METHODS FOR MEASURING YOUNG CHILDREN'S EDUCATIONAL ATTITUDES

by

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and Guidance

A paper based on a research project supported by a grant from the University of South Dakota General Research Fund

May, 1971

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EVALUATION OF SEVERAL METHODS FOR MEASURING YOUNG CHILDREN'S EDUCATIONAL ATTITUDES

I. INTRODUCTION AND REVIEW OF RESEARCH

The measurement of feelings and attitudes is becoming more and more popular in the elementary and secondary schools. Many people have realized that the proper use of measurement in the affective area can be just as important as its cognitive counterpart for making school an enjoyable, or even tolerable, place to learn.

The purpose of this study was to determine the best method or methods for measuring attitudes toward school subject matter in the lower primary grades. The subject matter used in the study was reading, art, and arithmetic, with an emphasis on the latter. Much work has been completed, and there are fewer problems in the area of attitude measurement for students above the third grade. Therefore, the present study dealt specifically with second and third graders.

Aiken (1969) has stated that it seems possible to measure attitudes toward arithmetic as early as the third grade, but such attitudes are probably not very stable in the early grades. He goes on to say that one difficulty with self-report inventories at the elementary school level is the readability and interpretability of the attitude instrument; another is the self-insight and conscientiousness with which the pupils fill out the inventory. It does seem, however, that the first of these difficulties could be overcome with work and ingenuity. Anttonen (1967) and others have recognized that there is a need for

research aimed toward improving attitude measurements at the elementary school level.

Fedon (1958) and Stright (1960) have both shown that very definite attitudes toward arithmetic may be formed as early as the third grade. Stright found that these attitudes tend to be more positive than negative in elementary school, but Fedon found that several youngsters had very negative attitudes toward arithmetic in the third grade. No evidence has been found of anyone attempting to directly measure attitudes toward arithmetic below the third grade level. However, Gupta (1971), Keislar (1971), and Strickland (1971) have recently been doing some work in the assessment of affective outcomes of school experiences with young children. It does seem logical that if both positive and negative attitudes toward arithmetic have been found at the lowest grade level measured, these differences in attitudes may well occur and they may be measurable at even lower grade levels.

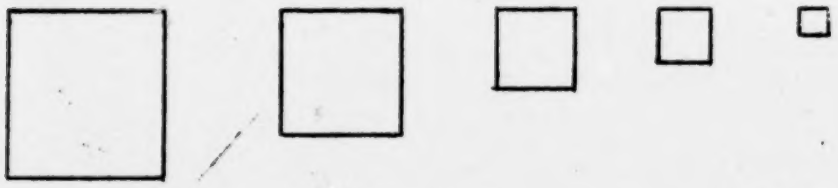
There has been some work done in the area of measuring attitudes toward arithmetic of early elementary children. Fedon (1958) used seven colors as responses for a Likert-type scale for measuring the attitude toward arithmetic of third graders. Anttonen (1967) and others have used the semantic differential technique for measuring the attitudes of elementary school children. Nealeigh (1967) experimented with a picture-preference test as a measure of pupil attitudes in mathematics. Gupta (1971), Keislar (1971), and Strickland (1971) have also been using pictures in scales for measuring attitudes and values of young children.

Shaw and Sulzer (1964) used a technique for measuring degree of responsibility that might be useful and could be adapted for use in

measuring attitudes of young students. The subjects in their study were second graders. They stated that the teacher was able to explain this procedure adequately and that few errors were made in using the response sheet. An example of their procedure adapted to attitude measurement would be:

Put an X in the box which answers the question best.

Do you like numbers and counting?



After reviewing the work that has been completed in this area of measurement of attitudes of young children, the author selected five different methods for further study in this research effort. They are discussed in the following section.

II. DESCRIPTION OF INSTRUMENTS

The five scales or methods can be divided into two general groups: two of the scales are ipsative in nature and three of them measure attitudes in a more absolute way. The two ipsative scales will be described after a short discussion of ipsative scores.

Ipsative scores come about when the strength of each attitude is expressed, not in absolute terms, but in relation to the strength of the individual's other attitudes. The frame of reference in ipsative scoring is the individual rather than a normative sample. The frame of reference is also in terms of the specific attitudes which the individual is asked to compare. Whenever an individual responds by expressing a preference for one item against another or others, the resulting score is ipsative. Under these conditions, two individuals with

identical scores may differ markedly in the absolute strength of their attitudes.

The first ipsative scale to be described is the Picture Scale. The scale was composed of pairs of pictures of little girls and little boys doing school tasks. The various tasks were writing numbers, adding numbers, subtracting numbers, writing the alphabet, writing a story, reading a story, and painting a picture. Each of these tasks was paired with every other task for a total of 21 pairs of pictures. The same scale was used for boys and girls. In the pictures, a little boy was writing a story, subtracting numbers, reading a story, and adding numbers. A little girl was performing the other three tasks. The child taking the scale was asked to put a large X on the picture in each pair which represented the task which he preferred to do. A sample page from the scale appears in the appendix.

The second ipsative scale has been named the Forced Choice Scale. The scale was composed of triads of statements concerning school tasks. The tasks were: write a story, write the alphabet, read a story, paint a picture, add numbers, subtract numbers, and write the numbers from 1 to 20. The triples were composed with each of the three arithmetic tasks combined with all possible pairs of the four non-arithmetic tasks for a total of 18 triads. The child was asked to put an X by the one that he liked the best and an O by the one that he liked the least. This scale was similar in content to the Picture Scale although triads instead of dyads were used, and it was entirely verbal in nature. A copy of the scale is in the appendix.

The first of the absolute scales has been titled the Millimeter Scale. Each item consisted of a 100 millimeter vertical line with small

division marks every 25 millimeters and with the word High at the top and the word Low at the bottom of the line. Above each of the vertical lines was a word or phrase. For the second grade scale these words were: Arithmetic, Counting, Adding, Writing Numbers, Reading, Playing, Subtracting, Art, and Word Problems. The scale for the third grade did not include Counting, but the term Multiplying was added. Thus, there were six terms relating to arithmetic in each scale. The child was asked to respond to each term by placing a short horizontal line across the vertical line. The height of his mark indicated the degree of his attitude. This was measured by the number of millimeters from the bottom of the line to the student's mark. A copy of the scale for the second grade is in the appendix.

The second of the non-ipsative scales has been named the Box Scale and has been based on the work of Shaw and Sulzer (1964). A sample item appears in the first section of this paper, and a copy of the scale for the second grade is in the appendix. The scale for second graders contained ten items related to arithmetic and one item related to each of the following topics: reading, art, and playing. The third grade scale had a similar format although the items did differ in content to some extent. Each item was scored on the basis of one point for a mark in the smallest box on up to five points for a mark in the largest box. Thus, the score on the arithmetic items could range from ten to fifty points while the scores on the reading and art items could range from one to five points on each.

The third absolute scale was named the Semantic Differential Scale. This scale was based on the work of Osgood et. al. (1957). The same set of five adjective pairs was used with each word or phrase

which the children responded to. There were five short lines between each adjective pair. This allowed the child a choice of five responses for each pair of adjectives. The adjective pairs were sad-happy, bad-good, nice-awful, dull-exciting, and pleasant-unpleasant. The words or phrases which the second grade students responded to were Arithmetic, Adding, Writing Numbers, Reading, Art, Playing, Subtracting, Word Problems, and Counting. The third grade scale was the same with the exception that Counting was replaced by Multiplying. The range of possible points for each adjective was from one to five and, for each word or phrase, from five to 25 points. The range of possible points for all six arithmetic items was from 30 to 150 points. Several pages of the scale for the second grade are included in the appendix.

III. PROCEDURES

A random order for the five scales was determined for administration purposes. The order was Picture Scale, Forced Choice Scale, Millimeter Scale, Box Scale, and Semantic Differential Scale. This order was used in each classroom.

The scales were administered to two second grade classrooms and two third grade classrooms in the public schools of Vermillion, South Dakota. The second grade sample consisted of 46 students while the third grade sample was 38 students.

The scales were administered by the author and seven doctoral students. Thus, two individuals were in each classroom. All of the directions were given verbally, and those scales which contained written material were also read to the students. It was found, however, that most of the third graders could read well enough to complete the scale before the administrator completed reading it to them. This was true

of only a few of the second graders. The total time for administering all five scales was between 40 and 50 minutes in the four classrooms.

Three scores were obtained from each of the five scales: attitude toward arithmetic, reading, and art. On two of the scales, Millimeter and Semantic Differential, two arithmetic attitude scores were determined. The first, in each case, was based on the student's response to the word Arithmetic. The second, again, in both cases, was based on the student's responses to the six terms relating to arithmetic. The term Arithmetic was included in the second score also.

The data was analyzed using the multitrait-multimethod procedure of Campbell and Fiske (1959). Due to the basic difference between the two ipsative and the three non-ipsative scales, the multitrait-multimethod approach was used on each of the two groups of scales. For all of the correlations, the scores used for the Millimeter and Semantic Differential scales were the ones based on the response to the single term Arithmetic. These analyses, as well as all others, were carried out separately for each of the two grade levels.

At the time the scales were administered, each of the four teachers was asked to nominate the three students in his classroom who liked arithmetic the most and the three students in his classroom who disliked arithmetic the most. The scores of these nominated students on all five scales were used in computing special biserial correlations, discussed in Guilford (1954), for the purpose of attempting to establish the validity of the various scales. A high biserial correlation in the positive direction indicates a high degree of relationship between teacher perceptions and scale scores. The same nominated students' scores concerning attitude toward reading were used to compute further

biserial correlations to determine if, at least to some extent, the teachers' nominations concerning like or dislike for arithmetic might have been a more global expression of like or dislike for all school subjects or school in general. In his discussion of the special biserial correlation, Guilford (1954) points out that we should look for a high correlation and that we should also look for consistency among the means for the group nominated as liking arithmetic, the group not nominated, and the group nominated as disliking arithmetic. Logically, we should expect decreases in the means for scales which measure attitude toward arithmetic as we progress from the first to the second to the third of the aforementioned groups. These means were computed.

The final analysis grew out of an inspection of the data. It appeared that second graders were more likely to indicate extreme attitudes or positions on the three non-ipsative scales than were the third graders. Thus, a count was made to determine the number of second graders and the number of third graders who expressed the minimum or maximum score on each of the three absolute scales.

It should be stated that no reliabilities were determined for any of the scales. Split-half reliabilities could have been determined for the Millimeter, Box, and Semantic Differential Scales on the basis of the single administration or test-retest reliabilities could have been determined for all five scales with a second administration. The basic reason for not computing the reliabilities was that this factor was secondary to determining an effective method for measuring young children's attitudes in terms of validity, ease of understanding, appeal, ease of administration, time of administration, interest and attention of the students, and ease of scoring. It was felt that when

one or two methods were identified on the basis of these factors, then reliabilities could be determined. The main purpose of this project was to merely identify the best method or methods for measuring attitudes so that further study could be undertaken.

IV. RESULTS

The intercorrelations among the scores for attitude toward arithmetic, reading, and art on the two ipsative scales for grade two are given in Table I while the comparable results for grade three are given in Table II.

The intercorrelations among the scores for attitude toward arithmetic, reading, and art on the three non-ipsative scales for grade two are given in Table III while the comparable correlations for grade three are given in Table IV.

In order to examine these results in the proper light, it is necessary to examine the criteria of Campbell and Fiske (1959) relating to test validity. The first criterion states that the reliability coefficients must be the highest values in the matrix and sufficiently high to warrant further inspection. The second is that the validity diagonals (correlations between the same traits measured by different methods) should be significantly different from zero and sufficiently large to encourage further examination of validity. The third criterion is that the validity coefficients should be higher than the values in its column and row in the heterotrait-heteromethod triangles, i.e., triangles giving correlations between different methods of measuring different traits. The fourth is that the validity coefficients should be higher than the correlations in the heterotrait-monomethod triangles, i.e., triangles giving correlations between the same method of measuring

TABLE I

Intercorrelations for the Two Ipsative Measures

Grade 2

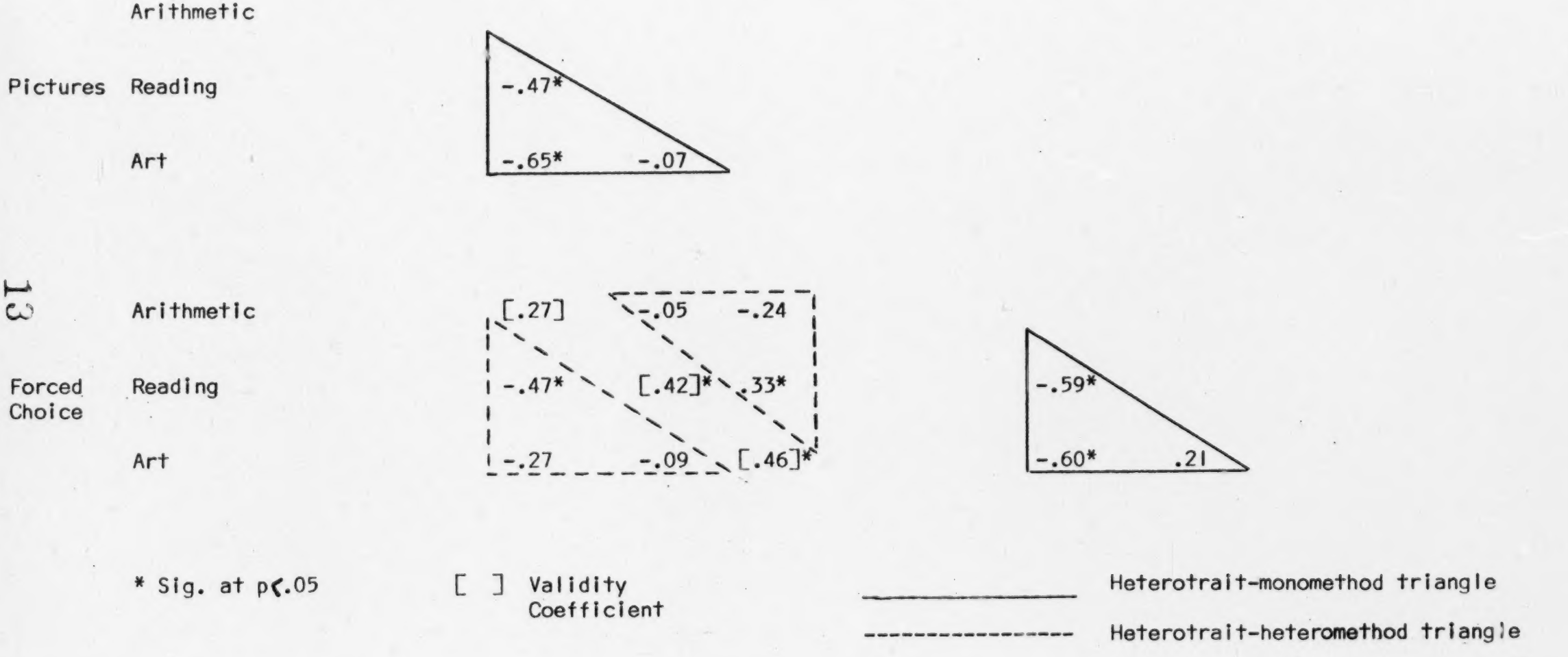


TABLE II

Intercorrelations for the Two Ipsative Measures

Grade 3

		Pictures			Forced Choice		
		Arithmetic	Reading	Art	Arithmetic	Reading	Art
Pictures	Arithmetic						
	Reading	-.52*					
	Art	-.36*	.05				
Forced Choice	Arithmetic	[.61]*	-.28	-.41*			
	Reading	-.37*	[.51]*	.14	-.43*		
	Art	-.50*	.10	[.35]*	-.73*	.14	

* Sig. at $p < .05$

[ ] Validity Coefficient

_____ Heterotrait-monomethod triangle

---------- Heterotrait-heteromethod triangle

TABLE III

Intercorrelations Among the Three Non-Ipsative Measures

Grade 2

		Millimeter			Box			Semantic Differential		
		Arithmetic	Reading	Art	Arithmetic	Reading	Art	Arithmetic	Reading	Art
Millimeter	Arithmetic									
	Reading	.14								
	Art	-.22	-.07							
Box	Arithmetic	[.54]*	.19	-.29*						
	Reading	.26	[.72]*	-.06	.38*					
	Art	-.30*	.03	[.88]*	-.32*	-.08				
Semantic Differential	Arithmetic	[.73]*	.14	-.18	[.58]*	.23	-.24			
	Reading	.03	[.66]*	-.04	.17	[.45]*	-.03	.09		
	Art	-.27	-.02	[.65]*	-.22	-.02	[.69]*	-.16	.15	

* Sig. at $p < .05$ [ ] Validity Coefficient

_____ Heterotrait-monomethod triangle

---------- Heterotrait-heteromethod triangle

TABLE IV

Intercorrelations Among the Three Non-Ipsative Measures

Grade 3

		Millimeter			Box			Semantic Differential		
		Arithmetic	Reading	Art	Arithmetic	Reading	Art	Arithmetic	Reading	Art
	Arithmetic									
Millimeter	Reading	.24								
	Art	.12	.38*							
	Arithmetic	[.57]*	-.01	.05						
Box	Reading	-.08	[.25]	.31	.00					
	Art	-.20	.06	[.09]	-.01	.32				
	Arithmetic	[.59]*	.02	.00	[.72]*	-.01	-.11			
Semantic Differential	Reading	.18	[.45]*	.02	.16	[.13]	.02	.17		
	Art	.17	.25	[.41]*	.16	-.02	[.06]	.11	.28	

* Sig. at $p<.05$

[ ] Validity Coefficient

_____ Heterotrait-monomethod triangle

- - - - - - - - - - - - - Heterotrait-heteromethod triangle

different traits. Since no reliability coefficients were computed, the first criterion will not be considered.

In considering the results of Tables I and II in relation to the three remaining criteria, it can be seen that five of the six validity coefficients are significantly different from zero. However, the largest of the six is only .61. This means that for the largest correlation, the two measures are sharing only 37 per cent common variance.

It is difficult to assess criteria three and four on the basis of these results because of the number of negative correlations, especially in the heterotrait-monomethod triangles. The negative correlations in these triangles are simply due to the ipsative nature of the scales. Because of this difficulty and because of the negative correlations, it is recommended that ipsative scales <u>not</u> be used to measure attitudes of small children. This type of scale depends a great deal upon the material that is included for making choices. It is especially important that a single scale of this type <u>not</u> be used to measure more than one trait.

The correlations in Table III, Intercorrelations Among the Three Non-Ipsative Measures for Grade Two, fulfill the Campbell and Fiske criteria quite well. All validity coefficients are significantly different from zero. They range from .45 to .88. Only four other correlations are significantly different from zero, and none of these are as large as the smallest validity coefficient. Thus, both criteria three and four are met. The Millimeter Scale appears to be the best of the three in terms of validity coefficients.

The correlations in Table IV, the Intercorrelations Among the

Three Non-Ipsative Measures for Grade Three, are not so promising. Only five of the nine validity coefficients are significantly different from zero. Three of these coefficients are only .06, .09, and .13. The five significant validity coefficients meet criteria three and four, but the other four coefficients do not. Two of the measures, the Millimeter and Semantic Differential Scales, do appear to be better than the Box Scale in terms of their intercorrelations. It can also be noted that the validity coefficients for Arithmetic, the measure of major interest, are all significant.

Table V contains the special biserial correlations between the Arithmetic scores from the various scales and the teacher nominations concerning attitude toward arithmetic. It was felt that high positive correlations in this analysis would lend support to the validity of the scales which produced the high correlations. It was recognized, however, that the teachers' judgments concerning students' attitudes might not be a valid criterion measure for validation purposes. It can be seen that of the fourteen correlations listed in Table V, six of them are negative and that the highest correlation is only .27. The only scales which produced positive correlations at both grade levels were single term Millimeter and Semantic Differential Scales.

As a check on the value of the teachers' nominations, the same type of correlation was computed between the Reading scores on the various scales and the teacher nominations concerning attitude toward arithmetic. These correlations are given in Table VI. It can be noted that only one of the ten correlations is negative and that the highest correlation was .32. These results would indicate the possibility that the teachers' nominations may have been concerned with a more global

TABLE V

Special Biserial Correlations Between Scale Scores (Arithmetic) and Teacher Nominations of Attitude Toward Arithmetic

Scale	Pictures	Forced Choice	Millimeter		Box	Semantic Differential	
			One Term	Six Terms		One Term	Six Terms
Grade 2	-.18	.14	.10	.08	-.11	.11	.12
Grade 3	-.07	-.19	.27	-.01	.08	.05	-.12

TABLE VI

Special Biserial Correlations Between Scale Scores (Reading) and Teacher Nominations of Attitude Toward Arithmetic

Scale	Pictures	Forced Choice	Millimeter One Term	Box-	Semantic Differential One Term
Grade 2	.13	.12	.01	-.15	.05
Grade 3	.32	.14	.29	.04	.01

attitude than attitude toward arithmetic such as attitude toward school. The results would also cast a great deal of doubt on the teachers' nominations as a valid criterion measure. Since it is the only criterion measure available in the study, however, it will be referred to again.

Guilford (1954) suggests that while the special biserial correlation is important, so is a logical progression of means for the various groups which have been identified. The group nominated by the teachers which likes arithmetic the best should have the highest mean on a scale if it is valid, the group nominated as disliking arithmetic the most should have the lowest mean, and the group not nominated should fall in between. That is based on the assumption, however, that the teachers' nominations are valid. The results of this analysis of means are presented in Table VII. It can be seen that the only scales to meet the standard stated above are the Millimeter (One Term) and the Semantic Differential (One Term and Six Terms) Scales for grade two and the Millimeter (One Term) Scale for grade three. Again, it appears that the most valid scale is the Millimeter Scale if the nominations are valid.

Table VIII shows the number of students scoring the minimum or maximum number of points on each of the three non-ipsative scales for the two grade levels. This was done to show that the second graders were more absolute in their choices. They were more likely to choose one of the extremes in expressing their attitudes than were the third graders. However, the percentage of second graders choosing one extreme or the other was lowest on the Millimeter Scale as compared to the other two scales. This same relationship held true for the third graders also.

TABLE VII

Scale Means for Three Groups: Those Nominated As Having High Attitudes Toward Arithmetic, Those Nominated As Having Low Attitudes Toward Arithmetic and Those Not Nominated (Middle Group)

Grade 2

Group	Picture	Forced Choice	Scale Millimeter One Term	Scale Millimeter Six Terms	Box	Semantic Differential One Term	Semantic Differential Six Terms
High	1.83	28.67	44.00	302.50	30.83	15.00	98.67
Middle	3.03	28.76	39.47	256.29	30.26	12.65	90.29
Low	3.00	25.17	29.17	256.33	34.67	12.17	83.67
Total	2.87	28.28	38.72	262.33	30.91	12.89	90.52

Grade 3

Group	Picture	Forced Choice	Scale Millimeter One Term	Scale Millimeter Six Terms	Box	Semantic Differential One Term	Semantic Differential Six Terms
High	3.83	31.67	77.33	393.00	33.00	20.00	102.33
Middle	4.04	33.12	49.38	322.85	27.46	14.08	89.65
Low	4.33	36.00	43.83	397.50	30.50	18.67	115.33
Total	4.05	33.27	52.92	345.71	28.82	15.74	95.71

TABLE VIII

Number of Students Scoring the Minimum or Maximum
Number of Points on Each of the Three Non-Ipsative Scales

	Grade 2 (N=46)			Grade 3 (N=38)		
	Arithmetic	Reading	Art	Arithmetic	Reading	Art
Millimeter						
Minimum	16	3	0	0	0	0
Maximum	4	13	28	0	1	2
Total	20	16	28	0	1	2
% of Sample	43.5	34.8	60.9	0.0	2.6	5.3
Box						
Minimum	0	2	1	0	2	1
Maximum	4	38	44	1	15	26
Total	4	40	45	1	17	27
% of Sample	8.7	87.0	97.8	2.6	44.7	71.1
Semantic Differential						
Minimum	16	3	0	10	4	1
Maximum	6	27	40	12	19	25
Total	22	30	40	22	23	26
% of Sample	47.8	65.2	87.0	57.9	60.5	68.4

In general, the children indicated a greater preference for the Picture Scale when they were asked which scale they liked best. It should also be noted that few errors in taking the scales were recorded by the investigator. Those which did occur were mainly on the Picture and Forced Choice Scales.

V. CONCLUSIONS AND RECOMMENDATIONS

1. Group attitude scales concerning school subjects can be administered to second and third graders with few problems and very few errors.
2. The children enjoyed the scale with pictures the best.
3. Ipsative attitude measures should be used with <u>great</u> caution.
4. Teacher nominations concerning attitude toward specific subjects may be quite global in nature and not very valid as a criterion measure for primary grade attitude scales.
5. Second graders are more likely to choose one of the extremes in expressing their attitudes when compared with third graders.
6. The two most promising types of scales which were used in this study were the Millimeter and Semantic Differential Scales in that order.
7. A method which may be promising would be the addition of pictures to the Millimeter and Semantic Differential Scales for both interest and clarity.

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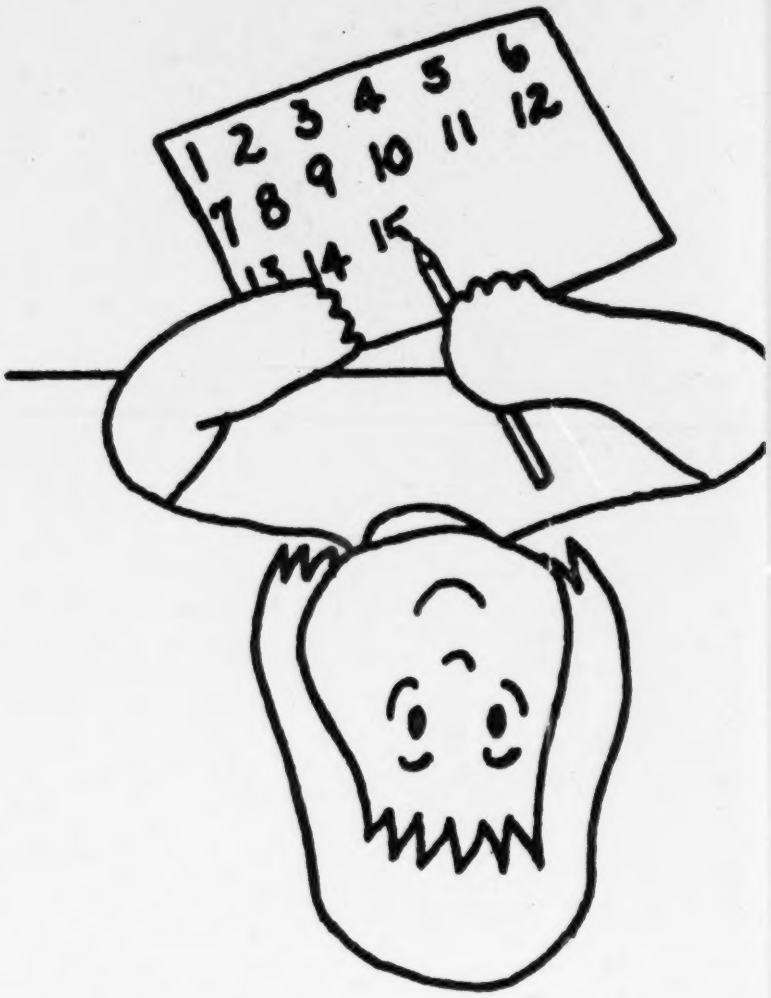
APPENDIX

A long time
ago, in a big
forest,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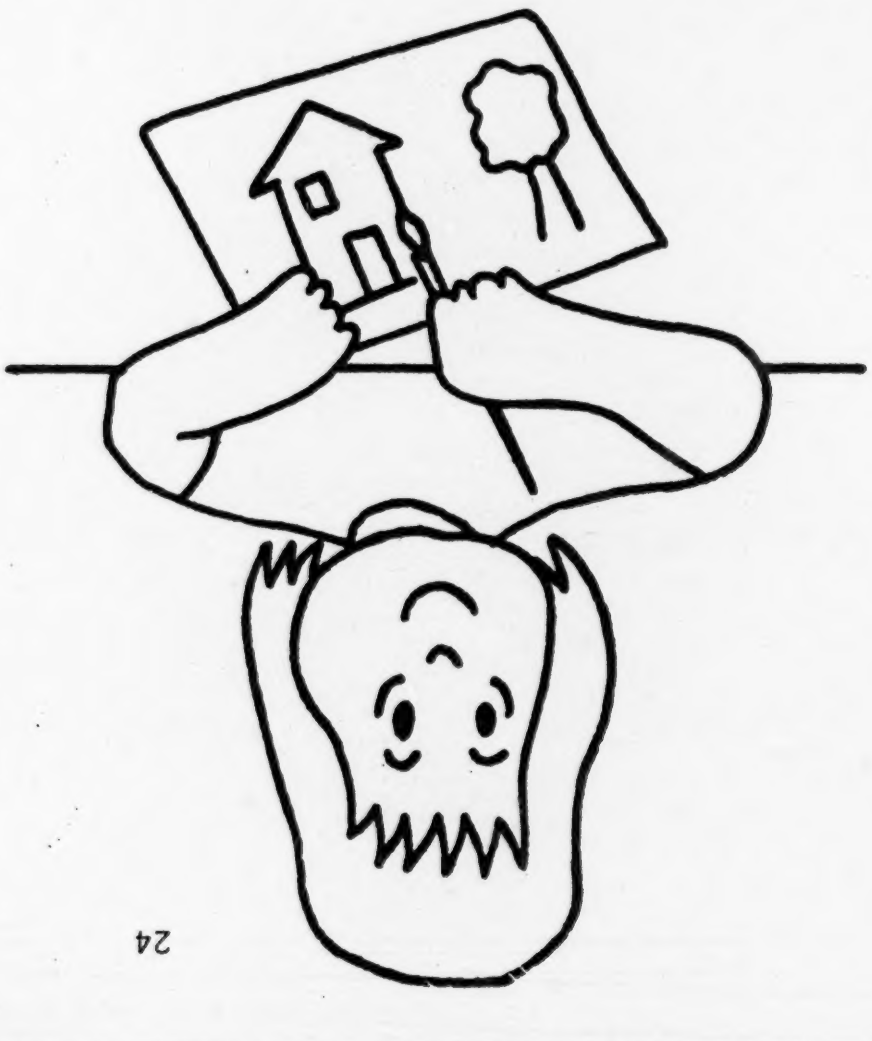
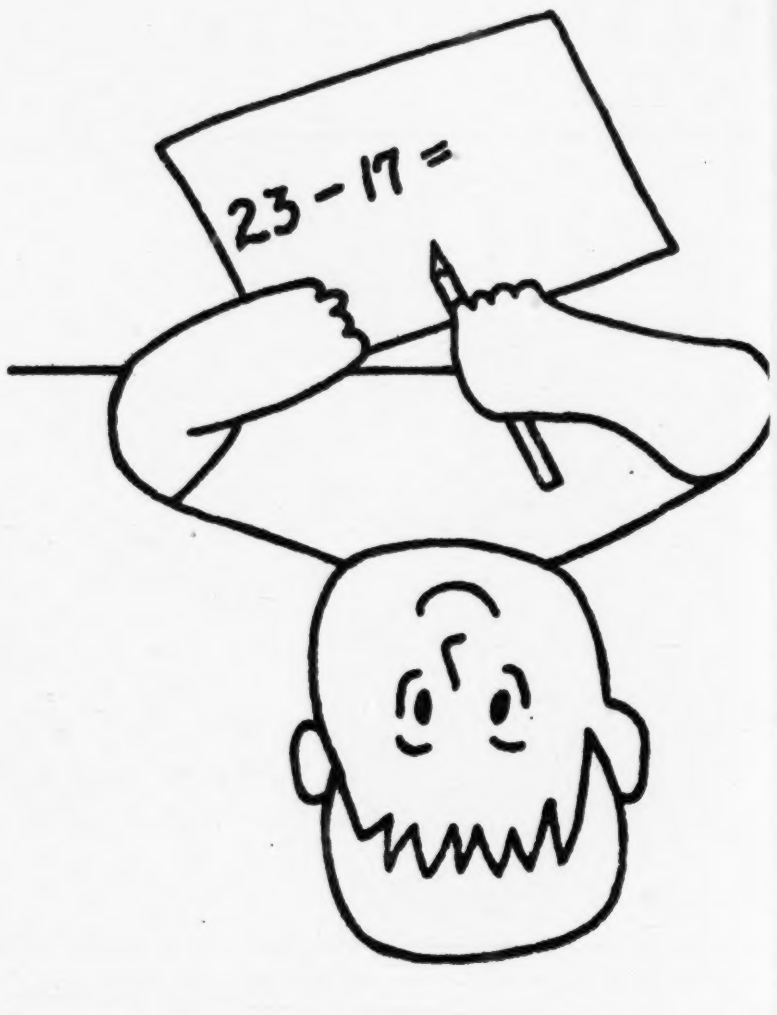
13 14 15




23 - 17 =

ED 056 087

Forced-Choice Scale

Listed below are groups of three things to do. I will read to you each of the three things and I would like you to do this:

Put an X by the one you like the best.
Put an O by the one you like the least.

Here is an example:

____ Go to bed.

____ Eat candy.

____ Pet a cat.

1. ____ Write a story.

   ____ Write the numbers from 1 to 20.

   ____ Write the alphabet.

2. ____ Subtract numbers.

   ____ Read a story.

   ____ Paint a picture.

3. ____ Write the alphabet.

   ____ Paint a picture.

   ____ Add numbers.

4. ____ Add numbers.

   ____ Read a story.

   ____ Write a story.

5. ____ Write the alphabet.

   ____ Subtract numbers.

   ____ Paint a picture.

TM 000 891

6. _____ Read a story.

_____ Write the alphabet.

_____ Write the numbers from 1 to 20.

7. _____ Subtract numbers.

_____ Write a story.

_____ Write the alphabet.

8. _____ Paint a picture.

_____ Add numbers.

_____ Read a story.

9. _____ Write a story.

_____ Paint a picture.

_____ Write the numbers from 1 to 20.

10. _____ Write a story.

_____ Add numbers.

_____ Paint a picture.

11. _____ Read a story.

_____ Write a story.

_____ Subtract numbers.

12. _____ Write the numbers from 1 to 20.

_____ Read a story.

_____ Paint a picture.

13. _____ Read a story.

_____ Write the alphabet.

_____ Add numbers.

14. _____ Subtract numbers.

_____ Read a story.

_____ Write the alphabet.

15. _____ Write a story.

_____ Write the numbers from 1 to 20.

_____ Read a story.

16. _____ Paint a picture.

_____ Write a story.

_____ Subtract numbers.

17. _____ Add numbers.

_____ Write a story.

_____ Write the alphabet.

18. _____ Write the numbers from 1 to 20.

_____ Paint a picture.

_____ Write the alphabet.

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MILLIMETER SCALE

Please tell me how you feel about the activities below by drawing a short line across each of the long lines. For example, if I asked you how much you like ice cream, you could tell me in this way: if you like ice cream very, very much you would make a short mark high up on this long line. If you liked it some, you might put your mark about in the middle. If you did not like ice cream very much at all, you would put your mark down low.

So, if you like something very much, make your short mark high up on the long line. If you don't like tI very much at all, make your short mark down low on the long line. The place where you put your mark will tell me how well you like or dislike these things.

Ice Cream

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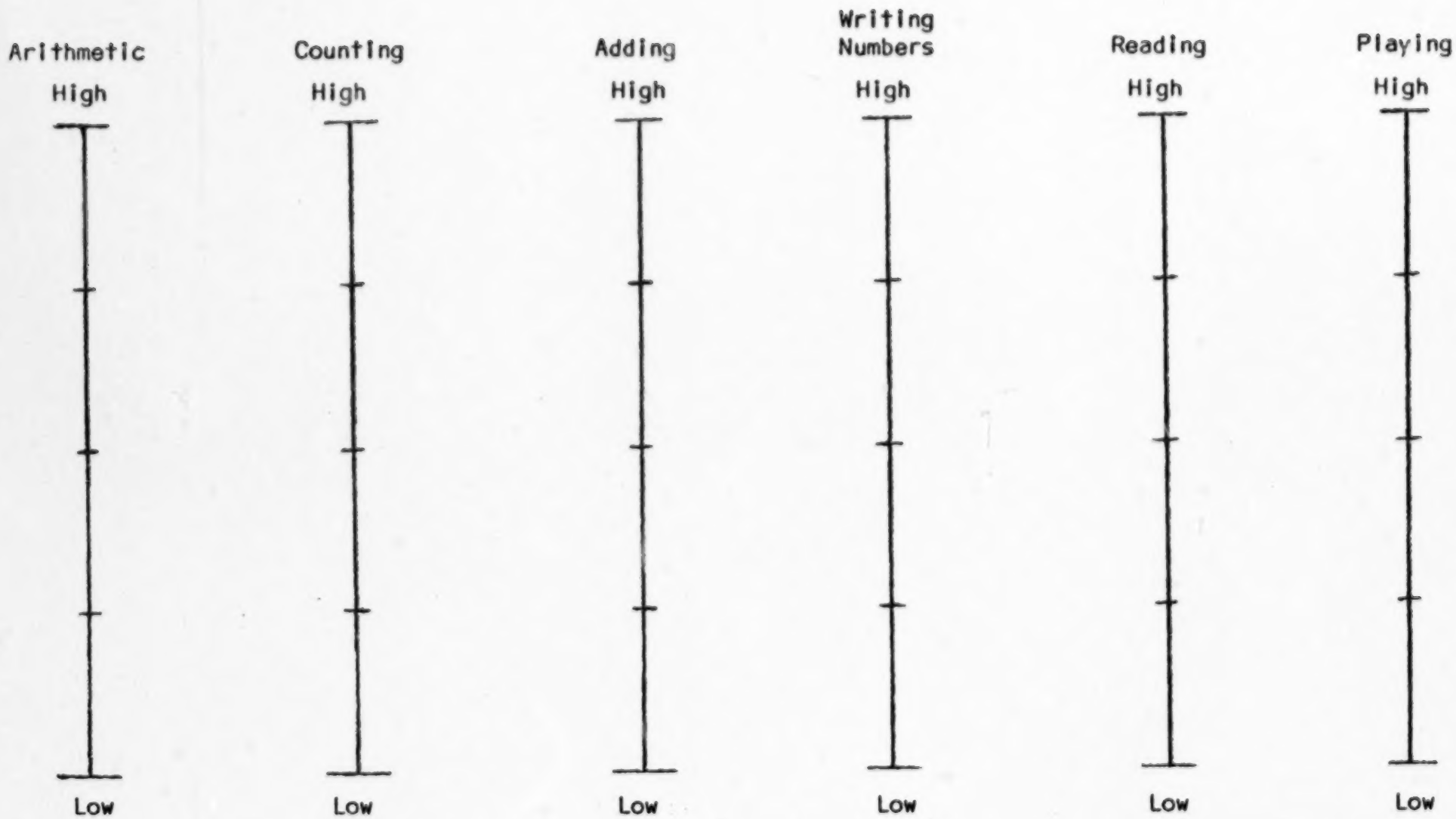
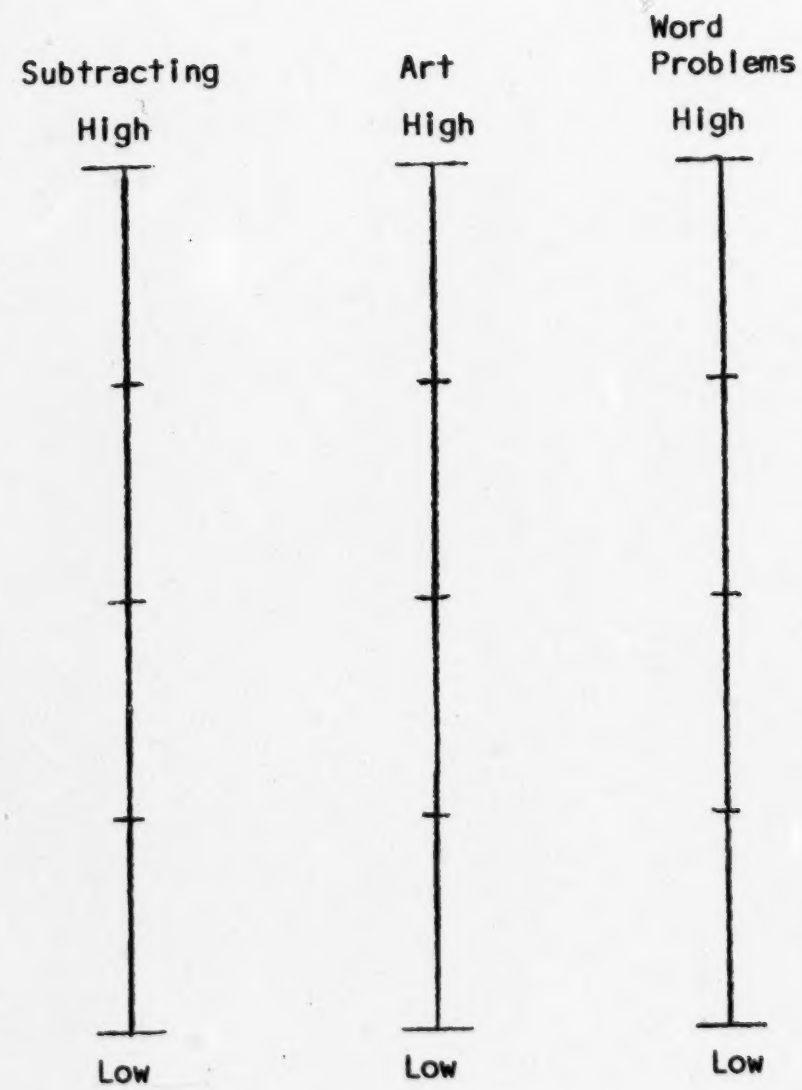

Arithmetic
High
Low
Counting
High
Low
Adding
High
Low
Writing
Numbers
High
Low
Reading
High
Low
Playing
High
Low

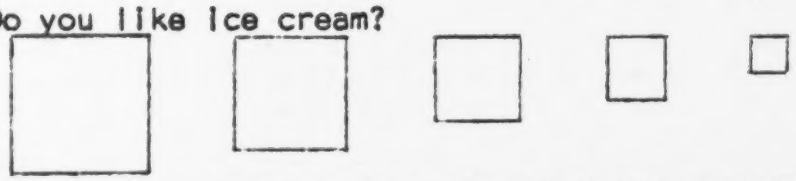

Subtracting
High
Low
Art
High
Low
Word
Problems
High
Low

ED 056 089

Box Scale

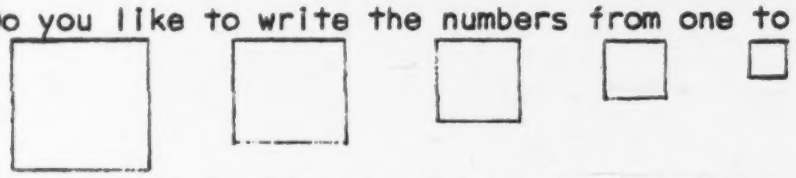
Put an X in the box which answers the question best for you. Here is the way it works:

Do you like ice cream?

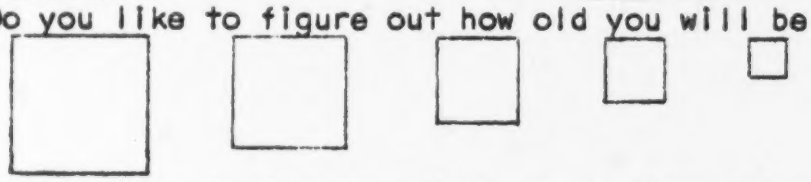


If you like ice cream very, very much you should put an X in the biggest box. If you like it quite a bit, put an X in the next box. If you like it some, put an X in the middle box. If you like it just a little, put an X in the next box. If you don't like ice cream, put an X in the littlest box.

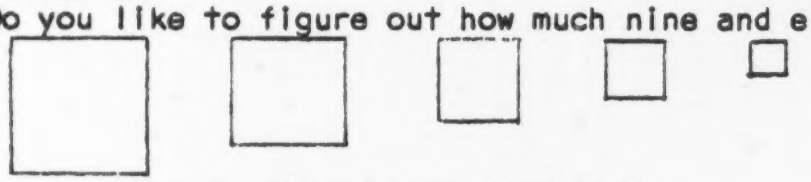
1. Do you like to write the numbers from one to one hundred?



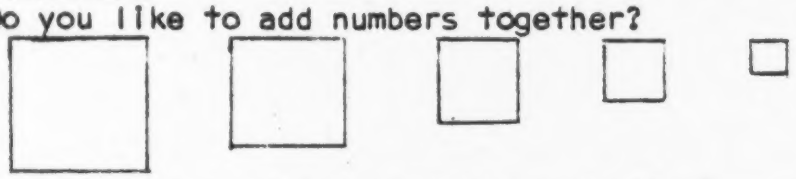
2. Do you like to figure out how old you will be in five years?



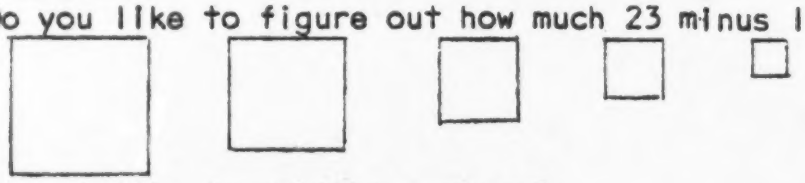
3. Do you like to figure out how much nine and eleven make?



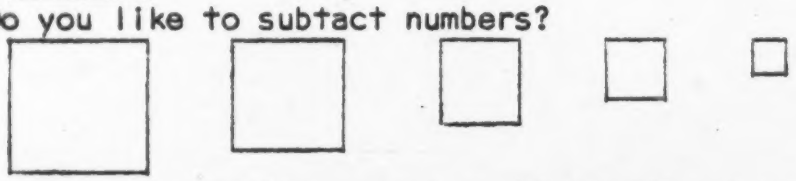
4. Do you like to add numbers together?



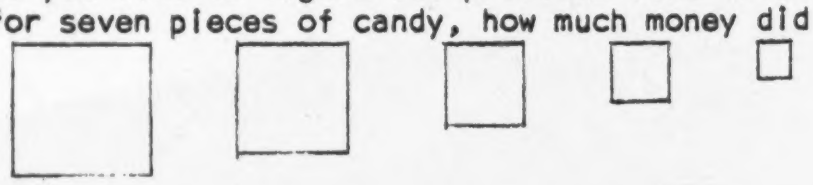
5. Do you like to figure out how much 23 minus 17 is?



6. Do you like to subtact numbers?



7. Do you like to figure out problems like this: If Tom paid three cents each for seven pieces of candy, how much money did he spend?



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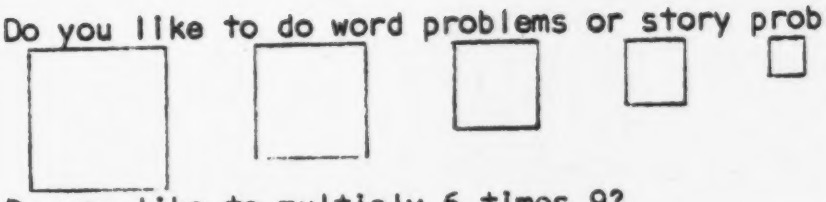
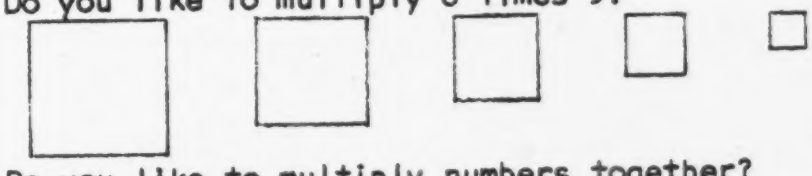
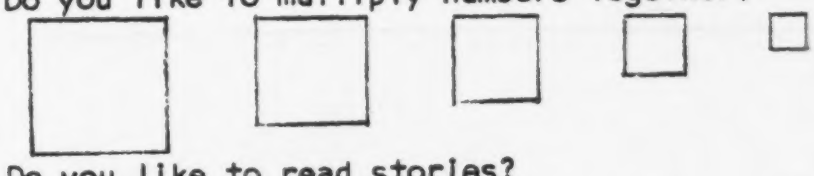
8. Do you like to do word problems or story problems?



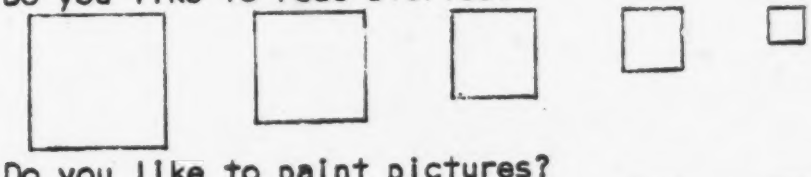
9. Do you like to multiply 6 times 9?



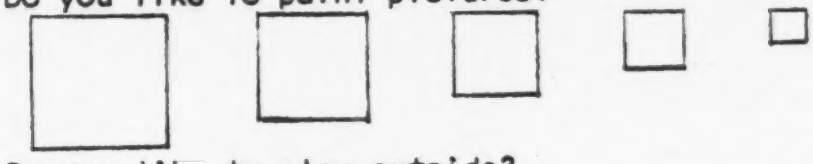
10. Do you like to multiply numbers together?



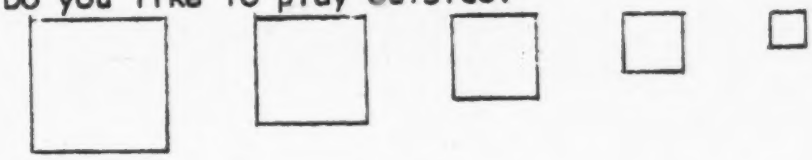
11. Do you like to read stories?



12. Do you like to paint pictures?



13. Do you like to play outside?



Semantic Differential Scale

Please tell me how you feel about the activites on the following pages by putting an X on one of the five short lines. For example, let's look at ice cream. Doe ice cream make you feel said or happy? Put an X on one of those five short lines to tell me. If it makes you very sad, put your X on the short line next to the word "sad." If it makes you very happy, put your X on the short line next to the word "happy." If ice cream makes you happy some of the time and sad some of the time, your X should go in the center. If you are happy more than you are sad, your X should go on the second short line from the word "happy." If you are sad more than you are happy, your X should go on the second short line from the word "sad." Now, do the same thing for the next set of words, bad and good. Make an X on one of the five short lines that will tell me whether you think ice cream is very bad, very good, or somewhere in between. And then, do the same for the sets of words, nice and awful, dull and exciting, and pleasant and unpleasant.

ICE CREAM

SAD	_____	: _____	: _____	: _____	: _____	HAPPY
BAD	_____	: _____	: _____	: _____	: _____	GOOD
NICE	_____	: _____	: _____	: _____	: _____	AWFUL
DULL	_____	: _____	: _____	: _____	: _____	EXCITING
PLEASANT	_____	: _____	: _____	: _____	: _____	UNPLEASANT

ARITHMETIC

SAD	_____ :	_____ :	_____ :	_____ :	_____	HAPPY
BAD	_____ :	_____ :	_____ :	_____ :	_____	GOOD
NICE	_____ :	_____ :	_____ :	_____ :	_____	AWFUL
DULL	_____ :	_____ :	_____ :	_____ :	_____	EXCITING
PLEASANT	_____ :	_____ :	_____ :	_____ :	_____	UNPLEASANT

ADDING

SAD	_____ :	_____ :	_____ :	_____ :	_____	HAPPY
BAD	_____ :	_____ :	_____ :	_____ :	_____	GOOD
NICE	_____ :	_____ :	_____ :	_____ :	_____	AWFUL
DULL	_____ :	_____ :	_____ :	_____ :	_____	EXCITING
PLEASANT	_____ :	_____ :	_____ :	_____ :	_____	UNPLEASANT

WRITING NUMBERS

SAD	_____ :	_____ :	_____ :	_____ :	_____	HAPPY
BAD	_____ :	_____ :	_____ :	_____ :	_____	GOOD
NICE	_____ :	_____ :	_____ :	_____ :	_____	AWFUL
DULL	_____ :	_____ :	_____ :	_____ :	_____	EXCITING
PLEASANT	_____ :	_____ :	_____ :	_____ :	_____	UNPLEASANT

READING

SAD	_____ :	_____ :	_____ :	_____ :	_____	HAPPY
BAD	_____ :	_____ :	_____ :	_____ :	_____	GOOD
NICE	_____ :	_____ :	_____ :	_____ :	_____	AWFUL
DULL	_____ :	_____ :	_____ :	_____ :	_____	EXCITING
PLEASANT	_____ :	_____ :	_____ :	_____ :	_____	UNPLEASANT